

What is claimed is:

1. A system comprising:

a plurality of devices, each device coupled to a low power transceiver that transmits and receives information;

5 a plurality of router nodes, each router node having a transceiver capable of receiving device information from one or more proximate wireless devices and capable of wireless communication at a higher power level with other router nodes; and

a controller coupled to at least one router node for receiving device information, wherein the router nodes transmit device information either to the controller or to  
10 another router for further transmission of the device information.

2. The system of claim 1 wherein the low power transceiver has a lower data bandwidth capability than the bandwidth of the communication between router nodes at the higher power level.

15 3. The system of claim 1 wherein the devices further comprise a battery for supplying power to the low power transceiver.

4. The system of claim 1 wherein at least one of the devices is selected from the  
20 group consisting of sensors, actuators and controllers.

5. The system of claim 1 wherein one of the routers is hardwired to a device which generates high bandwidth information.

25 6. The system of claim 1 wherein the controller is coupled between a telephone wiring network in a structure and external telephone lines.

5        8.        The system of claim 7 wherein the controller transmits information via the  
routers to devices in accordance with the touch tone commands.

10

A monitoring system comprising:

15

a controller communicatively coupled to a router.

12. The system of claim 10 wherein at least one of the devices is selected from the group consisting of sensors, actuators and controllers.

14. The system of claim 10 wherein the controller is coupled between a telephone wiring network in a structure and external telephone lines.

15. The system of claim 14 and wherein the controller is capable of intercepting touch tones transmitted on the telephone wiring network in the structure and interpreting them as controller commands.

5 16. The system of claim 15 wherein the controller transmits information via the routers to the device in accordance with the touch tone commands.

10 17. The system of claim 10 wherein the controller further comprises circuitry to receive transmissions representative of controller commands from a wireless telephone.

18. A device which communicates with a router node of a monitoring system which has a first tier of low power, low bandwidth device nodes which communicate with routers configured with a higher power, higher bandwidth network, the device comprising:

15 a low power wireless transceiver operating at a frequency which is unlicensed, for communicating with a router node located proximate to the transceiver; and

a power management module responsive to signals received by the transceiver for controlling a sleep power mode of the device.

20 19. The device of claim 18 and further comprising a battery for supplying power to the low power transceiver.

20. The device of claim 18 wherein the device is selected from the group consisting of sensors, actuators and controllers.

25 21. The device of claim 18, and further comprising logic circuitry for generating packets of information to be sent to a router, the packets comprising a device id, a priority, device status and data.

22. The device of claim 18, and further comprising logic circuitry for generating encoded packets of information to be sent to a router.

5 23. The device of claim 22, wherein the encoding is performed to provide a random appearance of the information.

24. The device of claim 18, wherein the power management module is responsive to a wake up signal from a router.

10 25. The device of claim 18, wherein the device further comprises a sensor, and wherein the power management module is responsive to changes in a parameter sensed by the sensor.

15 26. A network of router nodes communicatively coupled to a central controller of a security monitoring system, the network comprising:  
a first router node hardwired into the central controller;  
a second router node having a first receiver for receiving low power transmissions of physical condition related information from a plurality of devices located proximate the second router node, a second receiver for receiving high  
20 bandwidth transmissions from other routers in the system, and a first transmitter coupled to the first and second receivers that transmits information from the plurality of devices at a relatively high power to the first router node.

25 27. The network of claim 26 and further comprising a plurality of further router nodes located proximate to a further plurality of devices transmitting at low power.

28. The network of claim 27 wherein at least some of the plurality of further router nodes transmit information from the proximate devices to the first router node.

29. A sensor for coupling to router nodes of a monitoring system comprising:  
 a sensing device;  
 a comparator coupled to the sensing device; and  
 a low power transceiver coupled to the comparator for communicating with a  
 router node located proximate to the transceiver.

Sub  
24

30. A router node in a physical condition monitoring system, the router node comprising:

a first transceiver that receives low power transmissions of information from a plurality of devices located proximate the router node; and

a second transceiver that receives high bandwidth transmissions from other routers in the system, wherein the second transceiver further transmits information from the plurality of devices at a higher power level than the received low power transmissions.

31. The router node of claim 30 wherein the second transceiver operates at an unlicensed spread spectrum frequency range.

32. The router node of claim 31 wherein the frequency range is selected from the group consisting of 900 MHz, 2.4 GHz, and 5.8 GHz.

33. The router node of claim 30 and further comprising a device which is hardwired directly to the router node for direct communication of high bandwidth information.

34. The router node of claim 33, wherein the hardwired device comprises a video camera.

35. The router node of claim 34, wherein the router node transmits high bandwidth compressed video to other routers at the higher power level

36. A method of installing a security system comprising the steps of:

installing low power wireless devices at desired positions within a structure to be secured, the low power wireless devices transmitting information responsive to environmental parameters ;

- 5        locating router devices designed to receive low power transmissions from the low power wireless devices at various positions in the structure to ensure that each low power wireless device transmission is receivable by at least one router; and
- establishing a network routing table to route device transmissions of information to a central controller.

10

37. The method of claim 36, wherein the step of establishing a network routing tale comprises the steps of:

      creating a local router table at each router which lists devices whose signals are clearly received;

15

      transferring the router tables to the controller; and

      returning a table to each router identifying devices which should be serviced by each router.

20

38. The method of claim 37 wherein the network routing table is reestablished each time a device is added or removed.

Add A3